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The Introduction of the Euro and its Impact on International Financial Markets

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TABLE OF CONTENTS

List of Figures & Tables

CHAPTER 1

INTRODUCTION

Europe has undergone a financial revolution. Within the past decade, a great amount of change has taken place for many European countries. Integration has been at the forefront of the various issues these countries have had to face recently. Monetary and economic integration has had a meaningful impact on the overall character of each country. Prior to complete integration and the introduction of a single currency, the Euro, each country acted in a supremely independent way. However, since the advent of the Euro, each country has and will be forever changed. With the identity of each country and culture in the Euro countries remaining very vigorous, the financial and economic situation for each country has changed dramatically with increased reliance and dependence on each other. All the Euro countries are now bounded together in a very material way, with the actions by one country impacting the others. The Euro drastically influenced, forever, the way business is conducted in Europe. However, with the introduction of the Euro, it is unclear as to the impact the Euro would have on the various financial markets in which it is incorporated including the stock, bond, and interest rate markets.

In this paper, I pose and attempt to answer two questions:

1. Has the introduction of the Euro changed volatility in the stock, bond and interest rate markets?
2. Which countries benefited the most from the Euro and Why?

My hypotheses are:

1. The Euro has reduced volatility in all these markets: stock, bond and interest rate in all countries with the introduction of the Euro.
2. The European countries who are members of the European Union and those who engage in more international capital and trade flows benefited more than those countries that do not

I begin by tracing the highlights in the history of the European economic system prior to the Euro and discuss events that ultimately led to the introduction of the Euro. Especially important events are discussed in Chapter 2, which is accompanied by Figure 2.1, a chronology of major developments, and Table 2.1, a table of various groupings of European countries. These tables and chronology list significant events throughout the history of the Euro. Section 2.1 discusses the early years, prior to the Euro launch, when the idea of integration was established between the European countries and a vision was set for complete future integration. Section 2.2, "The European Monetary System" is explained in this section. The EMS was very critical to the beginning stages of economic integration. In this section, the "ECU" or European Currency Unit is explained as it was a very important precursor to the Euro. Section 2.3, the influence and impact of The Single European Act of 1986 is discussed as well as important explanation and discussion of the European regulatory bodies including the European Parliament and the European Council as well as the effects of their actions on the introduction of the Euro. Section 2.4 highlights the stages of admission to the European Monetary Union as established by the Maastricht Treaty. These stages are explained more in depth as well as crucial data that

pertain to the admission of certain countries into the Monetary Union. Section 2.5 highlights the launch of the Euro and the events surrounding its beginning. This section begins in 1999, when the Euro was launched as a unit of account for transactions. The last section in this chapter focuses on the future further financial integration in Europe. This section includes future plans for Europe as well as various viewpoints and perspectives on the current state of the Euro.

The topic of economic and financial integration is discussed throughout Chapter 3. Economic integration, as a broad and general concept is discussed in the first section, section 3.1. To understand integration within Europe, one must first understand the overall concept of economic integration, which is what I explain in this section.
Section 3.2 comprises a discussion on the theory behind common currency, as a part of economic integration, and, reasons as to why a country would want to adopt a common currency. This discussion is very important to lead up to the last section in Chapter 3, Financial Integration, which is where "Financial Market Integration" is defined and various theories and evidence are presented on the impacts of market integration.

Both of these chapters lead to the final analysis, which is explained and discussed in Chapter 4- Empirical Analysis. All data, methodology, regression analysis, results and conclusions to the two posed questions are illustrated in Chapter 4.

CHAPTER 2

THE HISTORY OF THE EURO

A monumental event took place on January 1, 2002 for 12 European nations and for the entirety of Europe. A single currency was launched which would be the cause of the elimination of 12 national currencies forever. Yet, while January 1, 2002 was the climatic point with the introduction of a brand new currency, it did not happen overnight. Many events took place to reach the culmination that occurred on January 1. While some events were very critical to the development of the Euro, others did not make as much of an impact. In this chapter, I will outline the history behind the Euro and the events that led up to its final introduction on January 1, 2002. (Figure 2.1, Table 2.1)

Section 2.1 The Early Years

The Euro began with the Summit Meeting at The Hague in December 1969. This conference was a meeting of the Heads of State and Government of the countries of the European Economic Community during December 1969. During this meeting, it was agreed upon that there was a need to have the community be transformed into an "economic and monetary union." Also, it was decided to open negotiations on the enlargement of the community and to reach agreement on the system of community finances. The Luxembourg Prime Minister, Pierre Werner, was appointed to report on how to reduce the exchange volatility between countries, which led him to the writing of the Werner Report. The Werner Report was published nearly a year later in October 1970. This report was critical to the development of the euro as this report called for the

centralization of the macroeconomic policies of the members of the European Economic Community. While the Werner Report was not a direct recommendation for a single currency or a "European Centralized Bank" which would soon follow, the Report was the first publication of the perspective that more centralization between the EEC's member states was a necessity for future financial growth and development of the European Community.

Towards the end of March 1971, another meeting between the European Council and the Heads of State and Government of the member states took place which proved significant. At this meeting, the member states committed to each other to harmonize their budgetary policies and reduce the margins of fluctuation between their currencies. This event was significant since it represented the first true commitment to the vision of future centralization and integration for Europe as well as a commitment to cooperation between European member states.

During the years of 1971 and 1972, more summit meetings and council meetings between the Heads of State of the member states took place. On April 3, 1973, the European Monetary Cooperation Fund (EMCF) was established. This fund was created by various members of the European Union who would deposit reserves to provide a pool of resources to stabilize exchange rates and finance balance of payments. In exchange for depositing 20% of their reserves, member states would have access to a wide variety of credit opportunities denominated in the European Currency Unit (ECU). This event was critical because each of the member states was now relying on each other in financial situations. Each state must cooperate together and pool their resources in order for a stabilization of exchange rates and streams of money. If one of the states decided not to

cooperate, that would have an impact on the rest and would not help to further the process of integration. This total commitment and cooperation was vital and ultimately realized by each member state.

Section 2.2 The European Monetary System

The European Monetary Cooperation Fund became the driving force behind much of the work and progress towards the advent of the Euro. In July 1978, the European Monetary Council met in Bremen. This Bremen European Council produced several specific proposals and policy guidelines which included the French-German proposal to launch the European Monetary System (EMS) and a European "concentrated action" package calling for the coordination of macroeconomic policies.

The creation of the European Monetary System began in the year 1978 with a meeting between the German Chancellor Helmut Schmidt and French president Valery Giscard d'Estaing. Both government leaders discovered that they shared similar feelings surrounding the "disorder" of monetary issues after the end of the Bretton Woods system, as well as, the inability of the European member states to sustain the "Snake" monetary arrangement, whereby those countries had agreed to limit the volatility in their bilateral exchange rates and reduce exchange exposure in and among each other. More specifically, the "Snake" was an exchange rate system created in 1972 to restrict the fluctuation of currencies between -2.25% and 2.25%. Participating countries were Belgium, Denmark, France, Ireland, Netherlands, Germany, and Italy. Schmidt and Giscard d'Estang viewed this as a serious issue for the EU states as they saw dramatic exchange rate movements as a threat to the Common Market and decided that action needed to be taken. Not surprisingly, neither country, Germany nor France were willing

to risk a weakening of their home currencies in any arrangement created to solve the issue. Therefore, they decided upon the European Monetary System of which all European Community states were members as well as the Exchange Rate Mechanism being instituted as the scheme of monetary stabilization.

Just under a year later in 1979, the EMS came into force. The European Monetary System was created by many of the nations of the European Union. These nations were Belgium, Denmark, France, Germany, Ireland, Italy, Luxembourg, and the Netherlands. In effect, the European Monetary System was created to establish a stable exchange rate mechanism and prevent large fluctuations in member currencies relative to each other, as well as, counter inflation. This unification between the majority of the countries of the European Union represented a grand step towards the achievement of the centralization of Europe and especially its financial and economic integration. Each country united with each other to work for the improvement of its own country as well as its neighbors.

As a part of the newly created European Monetary System, the European Currency Unit, also known as the "ECU" came to serve as the accounting unit for the European Union member states. The ECU was essentially an artificial "basket" currency. The ECU was conceived on March 13, 1979 by the EEC, the European Economic Community.and was the precursor to the euro, introduced in 1999. The ECU proved critical to the overall success of the European Monetary System. Technically speaking, the EMS was a limited- flexible exchange rate system that defined bands in which the bilateral exchange rates of the member countries could fluctuate. A parity grid was created which defined the width of permissible fluctuation. Typically, the bandwidths

were 2.25% to each side. The borders of the bands were called the "upper intervention point" and "lower intervention point." The parity grid defined the parities for all combinations of the ECU currencies.

Section 2.3 The Single European Act of 1986

In light of the launch of the European Monetary System and the precursor to the euro, a realization was made concerning the overall market situation between the EU member countries. In February 1986, the Single European Act was signed by all 12 member states in which each agreed to set-up a single market throughout the European Union by 1992. This would entail a breakdown of restrictions and regulations placed on the exchange of capital flows, goods, and services which had been in effect for many years previous. In addition, the Single European Act stated that the Commission, a body of the European Parliament consisting of 20 Commissioners, monitor competition to ensure no enterprise act in such a way to restrict free movement of goods and services between the countries and within the Community or exploit a dominant market position within the Community.

The European Parliament was established in September 1976, as a regulatory body for the European Union. The European Parliament played an important role in the creation and development of the Euro. In a legislative sense, the Parliament took a vote on which countries qualified for membership of the Single Currency and also established rules and regulations for the operation of the European Central Bank. The Parliament also proposed various amendments to the legislation of the proposed single currency and voted on directives that protected the consumers and users of the new national currency. This created a free system of transfer between the countries and facilitated more

centralization and unification of Europe. The Single European Act strengthened the powers of the European Parliament, by creating new responsibilities including a new legislative process with a new procedure for cooperation between the Parliament and the Council.

The European Council is the body of heads of state or government of the member states of the European Union. This council gave Parliament new power and an equal base of power with which to be a co-legislator. The Single European Act was a very critical point for the European Community states in the sense that each country would be working together towards the stabilization and growth of the countries instead of simply focusing internally and concentrating on the betterment of just their home base.

With this Act, each country was reaching out to each other's market in the hopes of bettering not only their own economy but the economies of their neighbors and the entire European Economic Community. Each state realized that they must cooperate and collaborate together to ultimately realize their vision. In reflecting on what this Act states, the most significant section is that of no country dominating or exploiting their position within the Community. Specifically stated in the text of the Single European Act, "AWARE of the responsibility incumbent upon Europe to aim at speaking ever increasingly with one voice and to act with consistency and solidarity in order more effectively to protect its common interests and independence, in particular to display the principles of democracy and compliance with the law..." "Determined to improve the economic and social situation by extending common policies and pursuing new objectives, and to ensure a smoother functioning of the Communities by enabling the institutions to exercise their powers under conditions most in keeping with Community

interests."[1] This is most significant since without this, the entire process and purpose of the creation of a financially unified Europe would be pointless. Without a solid commitment of every state working towards the whole, the entire solidification of Europe would eventually never happen..

Section 2.4 The Maastricht Treaty

With the beginning steps towards the unification of Europe and the acts calling for the EU states' commitment in place, the next step was to decide upon concrete stages for the development of the European Monetary Union.

A committee was mandated which was presided over by the President of the European Commission, Jacques Delors, to study and propose these specific stages. Others involved in the committee and formation of the stages included, Alexandre Lamfalussy, General Manager of the Bank for International Settlements, Niels Thygesen, Professor of Economics, Copenhagen, and Miguel Boyer, President of the Banco Exterior De Espana. What resulted from their meeting was known as the "Delors Report," which outlaid three stages.

The first stage was set to begin on July 1, 1990. Stage One of the Economic and Monetary Union mainly constituted the setting of a reorganization and redirection in responsibilities for the various committees, governors, and member states, including creation of committees to delegate and complete the work of the three stages of the EMU. July 1 marked the date of the abolishment of restrictions on the movement of capital between member states. At this time, the Committee of Governors of the Central Banks and the member states of the EEC began to realize more responsibilities within the

[1] Single European Act. EUROPA. Retrieved Dec. 11, 2002 from the World Wide Web: http://europa.eu.int/abc/obj/treaties/en/entr14a.htm

monetary system.

In Stage One, a revision to the Treaty of Rome, which established the European Economic Community, was required to create the institutional structure. Upon the revision, a governmental conference was convened and after much negotiation surrounding the treaty, the Maastricht treaty was established and agreed upon. The Maastricht Treaty was eventually signed by the 12 member states of the EU, Belgium, France, Germany, Italy, Luxembourg, Netherlands, UK, Ireland, Denmark, Greece, Spain, and Portugal. However, this treaty didn't easily come into force as several countries declared referendum against it. In 1992, Denmark rejected the treaty as the country believed it would jeopardize the national identity of Denmark. However, after some alterations, Denmark ratified it. In mid-1992, France's national referendum barely approved the treaty by a margin of 51.05% to 48.95%. In July 1993, Britain's Parliament ratified the treaty despite a court challenge regarding the believed illegal power over policies transfer to the EU, after the treaty is approved. Through all these referendums, the Maastricht Treaty was finally approved and the process could continue towards complete unification.

This treaty proved crucial as it determined the criteria for member states to progress into the second and third stages of the EMU and to ultimately adopt the euro currency. Criterion one was price stability, in which the rate of inflation could not exceed the average rates of inflation of the three member states with the lowest inflation rates by more the 1.5%. Criterion two concerned interest rates, in which the Maastricht treaty stated that the long- term interest rates could not vary by more than 2% in relation to the average interest rates of the three member states with the lowest interest rates. In

regards to deficits, national budget deficits for the member states must be close to or below 3% of the gross national product. Also, public debt could not exceed 60% of the gross national product. The third, and most important criterion, exchange rate stability, was also addressed in that a national currency could not be devalued during the two previous years and would have to remain within the EMS 2.25% margin of fluctuation. These criteria proved to be rather stringent; however, this stringency was the key to a successful European Economic and Monetary Union. A common and stable ground with which each member states' economy converging was essential for the continuation and success of a monetarily single Europe.

Upon the passage of the Maastricht treaty that outlined the restrictions placed upon the member states and signaled the level of expectations the national governments and councils had for the Economic and Monetary System, the next stage could begin.

Stage Two of the EMU began on January 1, 1994 with the establishment of the European Monetary Institute (EMI).[2] The European Monetary Institute essentially replaced the previous Committees of Governors and the various subcommittees and working groups created to complete the progress towards the monetary union. The European Monetary Institute possessed several responsibilities towards the creation of the Economic and Monetary Union.

As stated in the Maastricht Treaty, the objective of the European Monetary Institute was the "realization of the conditions necessary for the transition to the third stage," and its tasks involved, "strengthening the co-ordination of monetary policies" and "making the preparations required for...a single monetary policy and.... a single

[2] Constitution of the ESCB. ECB. Retrieved Nov. 2, 2002 from the World Wide Web: http://www.ecb.int/about/emu.htm

currency."[3]

The duties of the EMI in the overall creation of the European Monetary Union can be grouped into a few different areas. One area focused on co-ordination and co-operation between the central banks of the member states as well as co-ordination of the monetary and exchange rate policies among the banks. Another area concerned the realization and design of the infrastructure, procedures, and policies necessary for the progression and success of Stage Three, in which a common currency and exchange rate policies would be established and functioning. The EMI also served as the advisory board on various economic and financial issues along with the governments and community institutions.

The European Monetary Institute held an important position in the EMU in that the EMI provided the platform in which the co-ordination and co-operation in many different aspects for the European member states could take place. Without such a centralized institutional structure created like that of the Economic Monetary Institute, with its own powers and resources to devote to the vision of the European Monetary Union, total convergence of the members' economies and national banks could not have been realized.[44]

While the EMI was enabling the unification between the European member states, a very important event in December 1995 took place. At the Madrid European Council meeting, the European Council discussed and agreed to the name of the common currency unit which was to be introduced at the beginning of Stage Three of the EMU,

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[3] Maastricht Treaty. BBC: NEWS. Retrieved Nov. 5, 2002 from the World Wide Web: http://news.bbc.co.uk/1/hi/in_depth/europe/euro-glossary/1216944.stm

[4] The European Monetary Institute: tasks and organization. ECU-activities. Retrieved on Nov. 13, 2002 from World Wide Web: http://www.ecu-activities.be/1994_2/carcascio.html

the "euro." Also at this meeting of the heads of state, the EMI was given additional responsibilities surrounding the preparatory work for the introduction of the single currency, including that of the strategy, rules, and operational procedures relating to a single monetary policy as well as the harmonization of all future exchange rate relationships between EU countries. In December of 1996, the EMI presented its report to the European Council, which detailed the fundamental elements of the new exchange rate mechanism for the member states. Also, in December 1996, the EMI presented the design of the euro banknotes, which were set to begin circulation on January 1, 2002.

Almost a year and a half later, on May 2, 1998, the Council of the European Union met and unanimously decided on the 11 member states that had fulfilled all the conditions necessary for the adoption of the single currency. These 11 states were Belgium, Germany, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal, and Finland. Only these states were admitted into the third and final stage of the EMU. An agreement was also reached at this meeting by the ministers of finance of these states, the governors of the national central banks of these states, the European Commission, and the EMI, that the current ERM bilateral central rates of the currencies were to be used in determining the fixed conversion rates for the euro. This meeting and event in particular is rather significant in that these member states of the EU are the ones that served as the pioneers of this financial revolution of Europe.

Once the 11 states were chosen to continue through Stage Three, the governments of these states met and appointed the President, Vice-President, and four other positions to the Executive Board of the European Central Bank. Appointments took place on June 1, 1998, which marked the date of the creation of the European Central Bank. Otherwise

known as the ECB, the establishment of this institution replaced the EMI.

The European Central Bank along with the National Central Banks of the member countries formed the European System of Central Banks (ESCB), also known as the "Eurosystem." The ESCB is governed by several decision-making bodies, the Executive Board, the General Council, and the Governing Council, which is the highest decision-making body comprising members of the executive board and the 12 governors of the central banks of the Eurozone. The European Central Bank is the heart of the "Eurosystem" and ensures that all tasks assigned to it are either accomplished by the ECB itself or delegated to the 11 national member banks. While the ECB holds several responsibilities, according to the Maastricht Treaty, the European Central Bank's primary goal is to ensure price stability for member states. Price stability is crucial for the eurozone as inflation is one of the biggest threats to a country's financial stability and growth. Price stability is defined as a year-to year increase in consumer prices of less than 2%. Controlling the inflation rate is accomplished by the ECB through influencing inter-bank interest rates among other factors. Other responsibilities of the ECB include definition and implementation of the monetary policy of the eurozone, conducting foreign exchange operations, issuance of euronotes throughout eurozone, and maintenance of a smooth operation of payment systems.

The European Central Bank is a critical element in the overall monetary policy and operations of Europe. With its base in Frankfort, Germany, a central location for the EU countries, the ECB must remain independent, as stipulated in Article 107 of the Maastricht Treaty. The greater the independence of a bank, the less likely it is to succumb to political pressures of the government to either grow the economy too fast or

finance excessive expenditures. Without this level of independence, the objective and unbiased nature of the bank towards all member countries and economies would be undermined.

Section 2.5 The Euro Launch

With the central bank of Europe now created and functioning to provide a more integrated economic environment for the member states, the next step was to introduce the new currency. Stage Three of the EMU began on January 5, 1999. On this date, the 11 member countries participating in the Monetary Union permanently fixed their exchange rates and adopted the single monetary policy. In 1999, the euro only functioned as a book unit of account whereby there were no actual euro notes or coins distributed. The euro was utilized in personal checks, bank statements, electronic records, and accounting systems. During this time, the European Union employed a "no compulsion, no prohibition" rule for the use of the euro. This meant that all those wanting to implement the euro as a book unit of account would have the legal right to do so but would not be forced to use it. Many larger companies at this time adopted the euro for financial accounting and reporting purposes however; their customers would not be forced to pay in euro.

As the year continued in light of the introduction of the new euro, everything seemed to be working out as planned. However, by the end of the year in December 1999, concerns among member states began to arise. By December 1999, the value of the euro had fallen below the US $ for the first time. Throughout 1999, the euro had ranged from $1.17 to as low as $.85. With anxiety high, many member states were losing faith in the strength of the euro. Several countries in particular had strong feelings

surrounding this issue and were very much against adoption of the euro. In September 2000, in a national referendum, the Danes voted against the adoption of the euro. Sweden also held negative feelings towards the single currency as well as Britain, which had opposition towards the euro in a ratio of three to one. Nonetheless, the plans for transition continued with the printing of 14.5 billion euro banknotes and minting 56 billion eurocoins. Also, on January 1, 2001, Greece joined the group of participating member states in the Monetary Union. Greece's participation came as a result of a meeting of the European Union Council on June 19, 2000 in which it was established that Greece had met the convergence criteria outlined in the Maastricht Treaty for eligibility to participate in the third stage of the Economic Monetary Union. Also on June 19, 2000, the fixing rate of the Greek Drachma to the Euro was established.

As the euro began its initial stages by being utilized as a unit of account, the last and final stage was to release euronotes and coins to the general public as their new single currency. On January 1, 2002, known as "E-day", euro notes and coins were finally launched into the hands of its citizens. It was decided that two months were going to be given to the European citizens to make the transition from their national currencies to the euro. National currencies ceased to be the legal tender in the eurozone on March 1, 2002. After centuries of monetary and fiscal independence, these 12 member nations made the final and irrevocable move to the abolishment of their national currency, which represented their country on so many different levels. As many countries found a sense of identification with their own local currency which had served as a symbol of their country and its independence for so many centuries, a new currency shared by 11 other countries is what would now be representing their country and their culture. From a

qualitative aspect, the introduction of this single currency of Europe is very important and a highly monumentus event for these 12 countries.

Section 2.6 Further Integration in Europe

Europe began its path of financial market integration in the 1970s with the passing of the First Banking Directive in 1977. This banking directive set the criteria for expansion across national borders within the European Community through incorporation of the "host country rule." Under this rule, foreign banking branches were required to gain permission from the host country before operations could begin.[55] However, this led to little cross-border transactions.

The idea of integration for Europe was heavily enforced in the mid 1980s with the signing of the Single European Act of 1986. As summarized by President of the European Commission Jacques Delors, "The Single Act means, in a few words, the commitment of implementing simultaneously the great market without frontiers, more economic and social cohesion, an European research and technology policy, the strengthening of the European Monetary System, the beginning of an European social area and significant actions in environment."[6]

A significant step towards financial integration came with the implementation of the Second Banking Directive in 1989. With this directive, three principles were established with regard to banking regulations and requirements in host and home countries. One principle was that of the "home country rule." This rule called for

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[5] FRBSF: Economic Letter- Integrating Banking Markets in the EC. Federal Reserve Bank of San Francisco. Retrieved Jan 27, 2003 from World Wide Web: http://www.frbsf.org/econrsrch/wklyltr/e19612.html

[6] The Single European Act and the Treaty of the European Union. Retrieved Jan. 28, 2003 from the World Wide Web: http://www.historiasigle20.org/europe/acta.htm

foreign branches of banks operating in foreign countries to be regulated by the home countries authorities and requirements, rather than the host country. This led to much more open and free flowing transactions between countries. The second principle was harmonization. Harmonization came in the form of a uniform set of safety and soundness standards as well as a single competitive environment for all European Community businesses to operate in. Essentially, a European country operating in various other European countries must operate under the same regulatory standards and capital requirements. The third principle was that of "Mutual Recognition." This established a single banking license for all banks and eliminated the need to obtain a license in each country of operation. This allowed for inter-nation banking and branching with the EC.

While the process to begin full financial market integration for Europe began in the 1980s, it wasn't until the introduction of the Euro in January 1999, that the concept of financial integration actually came into light. In May 1999, the Financial Services Action Plan was drafted and signed which suggested priorities and time-lines for legislative actions to ensure accomplishment of three objectives including insurance of a single market for wholesale financial services, open retail markets, and strict rules and supervision. This plan also called for adoption by the EU Council by the end of 1999 of directives on investments, distance selling of financial services, and electronic money.

In May 2000 at the Lisbon European Council meeting of the Heads of State and Government, it was set as a goal of the Union to be "the most dynamic, competitive and inclusive knowledge-based economic in the world by 2010."[7] With this objective in mind and the direction set, at the Barcelona European Council meeting in March 2002, five priorities were set. One of these priorities was that of integration of the financial sector

to make Europe a real economic power.

Currently, the situation surrounding financial integration in Europe has been at a standstill since 2000. Two main obstacles remain in the way, which has created some difficulty in continuing the full integration process. Dr. Sirkka Hämäläinen of the Executive Board of the European Central Bank discussed two main obstacles in her speech at the European Asset Management Conference in March 2002. One of these is of a regulatory nature and includes various tax and legal barriers to a completely unified system. However, the EU Council is implementing many new legislative proposals including that of the Financial Services Action Plan as well as setting up a joint committee between the ECB and the Committee of European Securities Regulators whose aim is to identify actions or standards to lower barriers to further integration.[78] Another problem is one of cross-border securities and derivatives clearing and settlement. This process provides public benefits however; the process of consolidation should be left in the hands of the private sector since they are the main owners and users of the clearing and settlement infrastructure. According to Dr. Sirkka Hämäläinen this poses a problem in which those who bear the costs may not be the ones who reap the benefits in an integrated marketplace. Until these two groups operate together in the same level field, full integration will fail to occur. This issue has been under investigation, mostly by the Giovannini Group. Formed in 1996, the Giovannini Group is a group of financial-market participants who work to identify inefficiencies in the EU financial markets and propose solutions to improve market integration.

Along with the problems and issues surrounding full integration, it remains at the

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[7] European economic and financial integration: State of play before Barcelona. EUROPA Retrieved Jan 27, 2003 from World Wide Web: http://europa.eu.int/comm/internal_market/en/speeches/02-99.htm

forefront of the EU's agenda. Future work to complete this process includes adoption of a single European prospectus. This "single passport for issuers," after passing home country authority, could be used throughout the EU to raise capital."[7] Yet much work remains to be able to replace 15 countries prospectuses and 15 different procedures. Another area of concentration for the EU is to update the Investment Services Directive-ISD, which is a staple of the EU legislation on the financial markets whereby rules for exchanges and investment firms are established. Yet again, the true challenge is to find a common ground for 15 different countries markets, investment service providers, and investors.[87]

Since the introduction of the Euro, it has had dramatic effects on the financial markets, and played a major role in the integration of the member countries markets. The emergence of the Euro marks the finality of the European economic and monetary integration. No longer will each country be operating in and of itself but will be infinitely tied to the operations of the financial markets and economic conditions of the other member countries. With this interdependence of European financial markets effected by the Euro, many changes have taken place in recent years. The bond and equity markets have undergone drastic effects as well as the convergence of the member countries interest rates.

Section 2.7 Concluding Remarks

In this chapter, I summarize the main events and highlights in the history leading up to the introduction of the euro. In Section 2.1, I explain the early years which highlighted the years from 1969-1972, the very beginning stages of economic

[8] Integrating Europe's Financial Markets. ECB. Retrieved Jan. 27, 2003 from the World Wide Web: http:www/ecb/int/key/02/sp020320.htm

cooperation between the European countries. In Section 2.2, I explain the European Monetary System, which was a very important part to the creation of the Euro and the integrated European financial system. Section 2.3, The Single European Act of 1986, discusses the implications of this critical act in the development of the Euro as well as the role of several bodies of the European government including the European Parliament, European Commission, and the European Central Bank. The Maastricht Treaty, a major document which created the stages for entry into the European Monetary Union is explained in Section 2.4. The culmination of all, the introduction of the Euro, or the "Euro Launch" comprises Section 2.5. Section 2.6 discusses recent events and perspectives on the financial and economic integration occurring in Europe, with some opinions and viewpoints from some of the most important people with respect to the operation of the Euro, members of the European Central Bank.

FIGURE 2.1

CHRONOLOGY OF THE EURO

December 1969- Summit Meeting at The Hague, The Netherlands

- Meeting between the Heads of State of the European Economic Community for agreement on continuation of progress towards economic and monetary unity.
- Agreement established on close alignment of social policies.
- Reaffirmed agreement on enlargement of the European Economic Community.
- Agreement established on phase in of Economic and Monetary Union (EMU) by 1980.
- Negotiations to begin between Denmark, Ireland, Norway, and the United Kingdom.
- Decision made at meeting to hold direct elections of the European Parliament and increase the EP's powers.
- Final report from Summit Meeting stated that the integration process be considered irreversible.

October 1970- Publication of the Werner Report

- Luxembourg Prime Minister, Pierre Werner wrote an European Community report on the creation of a complete monetary union among European economics.
- Werner Report appeared in 1970 and for the first time used the term "Economic and Monetary Union."
- Report stressed the need for monetary cooperation.
- Suggested the creation of a single European currency.

March 22, 1971- Member States agree on harmonization of budgetary policies and reduction of fluctuation between currencies

April 3, 1973- Creation of the European Monetary Cooperation Fund (EMCF)

- Created by members of the Exchange Rate Mechanism to stabilize the exchange rates for members of the European Union.

July 6/7, 1978- European Council meeting- Agreement on the French-German proposal to launch the European Monetary System (EMS)

- Agreement reached to establish a common strategy to achieve a higher rate of economic growth to reduce unemployment.
- Approval of plan to create European Monetary System.

March 13, 1979- European Monetary System created/Creation of the ECU

- Date on which the European Council met in Paris, France
- March 13, 1979- Settled as the date for which the EMS is entered into force.

- EMU established as an early form of monetary unity in which the EU currencies were restricted from movement to narrow trading bands known as parity grid in order to promote economic stability.
- European Currency Unit created on March 13, 1979 by the European Economic Community as the accounting unit for the currency area of the European Monetary System.
- ECU used as the unit of account for the implementation of economic and monetary policy

February 1986- Single European Act signed

- The 12 member nations of the European Community joined together to sign this Act which would remove any border checks, tariffs, customs, and capital and labor restrictions in an effort to unite and unify European economies.
- This act enabled the European Community to strengthen its ability to create a single internal market whereby goods, capital flows, and services could freely circulate by the end of 1992.
- First substantial modifications to the Treaty of Rome, signed in 1958.

June 26/27, 1989- Approval of Delors Report and Decision to begin first stage of EMU

- Jacques Delors, President of the European Commission published Delors Report which revisited the issues of the Economic and Monetary Union.
- State members agreed upon establishment of a committee, presided over by Jacques Delors, to develop and propose key steps to forming the European Monetary Union.
- Presented 3 specific stages for implementation of monetary union calling for the creation of a single European currency.
- Delors Report was basis for creation of committee to implement a 3 stage process to ultimately realize economic and monetary unification.

July 1, 1990- The First phase of the Economic and Monetary Union (EMU) begins

- July 1, 1990- date established by the European Council as the beginning of the first stage of EMU. Important date as it is the date at which all restrictions placed on the movement of goods, services, labor, and capital between member states of the European Union were permanently abolished.

December 9/10, 1991- Draft of Treaty on European Union created

- Called for completion of economic and monetary union and introduction of the single European currency, the ECU, by 1999 at latest.

February 7, 1992- Maastricht Treaty signed

- 3 stages set for completion of European Economic and Monetary Union.
- Sets criteria for admission to European Monetary Union.

- Treaty calls for single currency, common citizenship shared among all members' states of European Union, Common foreign and security policy, more effective European Parliament, and common labor policy.

January 1, 1994- European Monetary Institute created

- Beginning of Stage Two of the economic and monetary unionization of Europe called for by the Maastricht Treaty
- Marked a further commitment of progress for EU member states towards full cooperation

December 15/16, 1995- Madrid European Council names the European currency unit- "Euro" and confirms date of introduction

- Summit meeting held in Madrid, Spain by Heads of State or Government agreed on date of introduction and name of new currency of Europe, the "euro."
- Scenario decided upon for implementation of "euro."

June 1, 1998- European Central bank established

- Establishment with the effective appointment of the President, Vice-President, and 4 other members of the Executive Board of the ECB.

January 5, 1999- Launch of the Euro

- Third and final stage of EMU commencing with the fixation of the exchange rates of the currencies of the 11 member states which initially participated in the monetary union.
- Conduct of a single monetary policy operated by the European Central Bank.

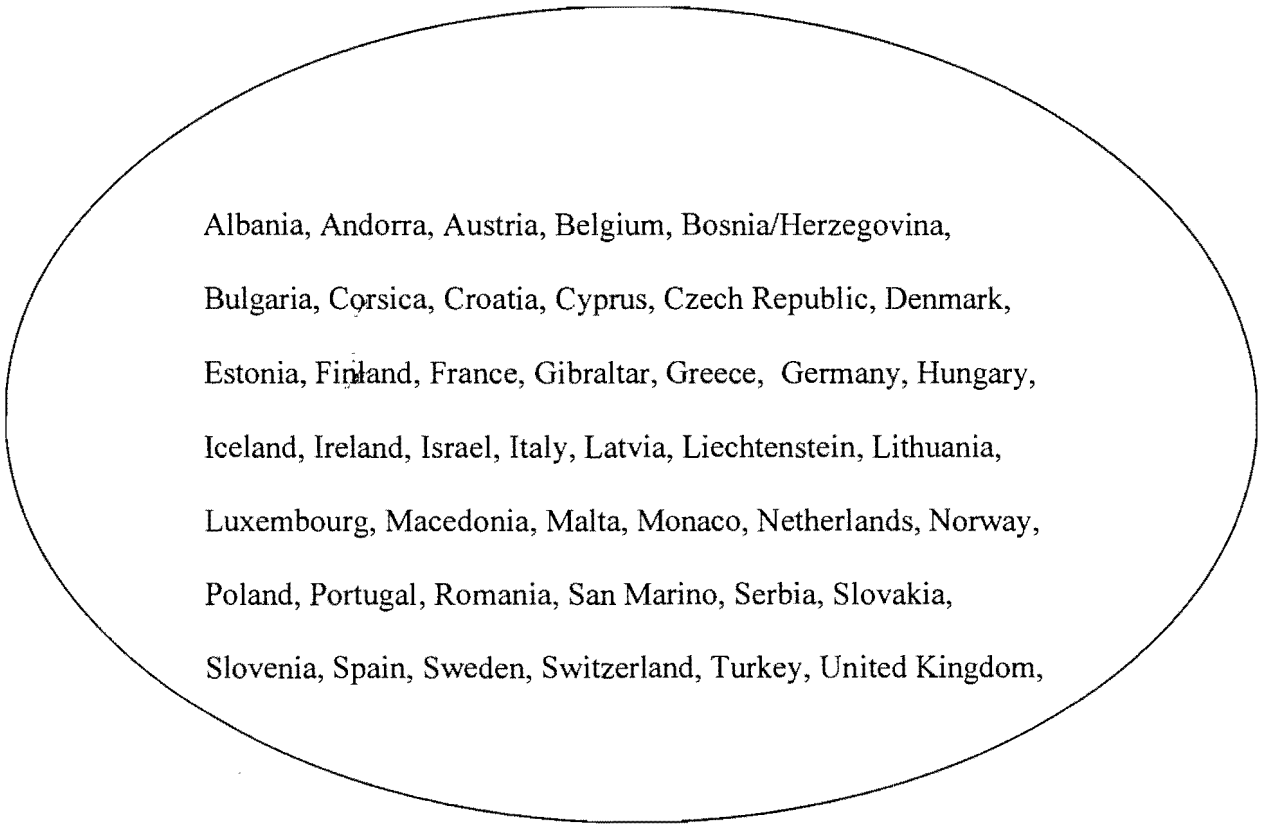
September 25, 2000- G7 nations stand in firm support of the Euro

- Investors had rushed assets out of euro-denominated assets, about $3 billion.
- G7 nations issued a statement indicating direct action to be taken to put upward pressure on the ailing euro.

January 1, 2002- Euro notes and coins launched into full circulation.

FIGURE 2.2

EUROPE AND EUROLAND



Source: http://www.mtgsm.com/tariffs/international_directions.html

Table 2.1
Chronology of European Organizations and Member Nations

Year	Name	What- Description	In	Out
1951	European Economic and Steel Community	Created under Treaty of Paris as common market for steel and coal. Ratified in 1952.	Germany, France, Belgium, Luxembourg	
1957	European Economic Community (EEC)	Economic association set up by Treaty of Rome. Aims to free movement of goods, services through abolition of tariffs/barriers. Common Market created.	**1958**- Belgium, France, Germany, Italy, Luxembourg, Netherlands **1973**- UK, Ireland, Denmark **1981**- Greece **1983**- Spain, Portugal **1995**- Austria, Finland, Sweden	
1967	European Union (EU)	EEC merged with European Coal and Steel Community to form the EU.	France, Germany, Italy, Netherlands, Luxembourg, Belgium	
1976	European Parliament	5 major party groups- European United Left, Party of European Socialists, Liberal, Democrat and Reform Group, Greens/European Free Alliance, European People's Party, European Democrats. Played aggressive role in running EU- created and launched initiatives.		
1979	European Monetary System (EMS)	Unify and stabilize member states economies. Major elements: European Exchange Rate Mechanism(ERM), European Currency Unit (ECU), European Monetary Cooperation Fund (EMCF)	Belgium, France, Germany, Italy, Luxembourg, Netherlands, UK, Ireland, Denmark.	

1979	Exchange Rate Mechanism (ERM)	Fix exchange rates of currencies between members of EU. Currencies allowed to fluctuate between ± 2.25% against other currencies.	**1979-** Germany, France, Belgium, Denmark, Netherlands, Ireland, Italy **1989-** Spain (fluctuation of ± 6.6%) **1990-** UK (fluctuation of ± 6.6%) **1992-** Portugal (fluctuation of ± 6.6%) **1995-** Austria **1996-** Finland, Italy re-entered at 15%	**1992-** UK & Italy
1979	European Currency Unit (ECU)	"Unit of Account" created as part of EMS. Value of ECU was weighted average basket of specified amounts of European currencies. Acted as unit for all transactions within EU.	**1979-1984-** Belgium, Germany, Denmark, France, UK, Ireland, Italy, Luxembourg, Netherlands. **1984-1989-** Greece joined **1989-1999-** Spain and Portugal joined	
1979	European Monetary Cooperation Fund (EMCF)	Fund organized by EMS where members of EU deposit reserves to provide a pool of resources to stabilize exchange rates and finance balance of payments support.	**1979-** Belgium, France, Germany, Italy, Luxembourg, Netherlands, UK, Ireland, Denmark	
1998	European Central Bank (ECB)	Seat: Frankfurt, Germany. 3 main decision-making bodies: Governing Council, Executive Board, General Council. Main responsibility: price stability within the Eurozone	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden	
Jan. 1, 1999	The Introduction of the Euro	Euro became the first single currency for the European Union nations.	Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain	

Table 2.2
Chronology of Treaties and Reports

Year	Name	What- Description	In	Out
1957	Treaty of Rome	Established European Economic Community. Called for common market within 12 years and by gradually removing trade restrictions and barriers.	**1958**- Belgium, France, Germany, Italy, Luxembourg, Netherlands **1973**- UK, Ireland, Denmark **1981**- Greece **1983**- Spain, Portugal **1995**- Austria, Finland, Sweden	
1970	Werner Report	Presented by Prime Minister of Luxembourg- Pierre Werner. Discussed need for monetary cooperation and suggested creation of single European currency.		
1989	Delors Report	Detailed 3 stage plan for implementation of monetary union. Called for creation of single currency for Europe.		
1991	Maastricht Treaty	Maastricht, Netherlands. Provided for single European currency, common citizenship, common foreign and security policy, More effective European Parliament, common labor policy. Established 5 criteria for member states to accomplish to be considered for adoption of new, single currency.	**Ratified by**: Belgium, Denmark, France, Germany, UK, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain	
1996	Stability & Growth Pact	Called for all countries to aim at achieving a balanced budget and countries. A budget deficit over 3% would be fined up to 0.5% GDP.	**Ratified by:** Austria, Belgium, Finland, France, Germany, Greece Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain	

CHAPTER 3

THEORY AND EVIDENCE ON ECONOMIC INTEGRATION AND A COMMON CURRENCY

Economic integration in the broadest sense can be defined as "a breakdown of barriers between nations in order to create a common market with a free flow of goods and services." As expressed by Juergen Schroeder of the University of Mannheim, Mannheim, Germany in his article *European monetary and economic integration: present state and future directions*, " Economic integration refers to the merging of national economies and the blurring of the boundaries that separate the economic activity of one nation-state from that of another. The different aspects of economic integration include free trade, common external tariffs, complete factor mobility and harmonization and centralization of economic policy. [1] Economic integration has been a critical element in the creation and development of the European Union, and ultimately to the introduction of the Euro in 1999. The theory of economic integration within Europe consists of many aspects which drive forward the continuation of the integration process for the 12 member states and the other European countries that will eventually join the EU. In this chapter, I will discuss the theory behind economic integration and how it relates to Europe, discuss the role of common currency and how it relates to the Euro, and I will end with discussion and analysis of financial market integration with an emphasis on the market integration in Europe.

Section 3.1 Economic Integration

Economic integration encompasses various dimensions with increasing levels of integration. The free trade area in the weakest form of integration is simply the breaking

down of tariffs and quantitative restrictions on trade between member countries.[9] The next level is the customs union which comprises a free trade area along with a common external tariff policy. Even more integration and dependence appears in the form of a common market whereby a customs union is established with complete mobility of factors of production and for the first time, a harmonization of economic and monetary policies. The strongest form of integration appears in an economic and monetary "union." In this union, economic policy is central rather than a coordination of monetary policies as in the common market. The common market is more integrated than the customs union since it involves a single market for goods, services, and factors of production. The European Common Market was established upon the ratification of the Single European Act in 1986.

Drivers behind the theory of economic integration include problems associated with fixed exchange rates between currencies, anti-inflationary pressures, exchange rate stability, coordination of monetary policies between each other, competition, unemployment, and high transition costs.

According to Whyman (2002), "the deflationary bias within the Stability and Growth Pact and the Maastricht Convergence Criteria reduced potential EU GDP growth by an estimated 5% during the 1990s, also resulting in an additional 7-10 million unemployed. High costs of transition are another severe problem associated with economic integration." According to Whyman, "The European Banking Federation calculated that the EU banks are likely to spend between £6.3 and £7.9 billion over a 4 year period amounting to 2% of operating costs for each changeover year. The British Retail Consortium has estimated the cost of currency changeover for its national retail sector to cost approximately £3.5 billion, with 17% of this total resulting from 6 months

[9] Schroeder, Juergen. (2000). European monetary and economic integration: present state and future directions. Journal of Asian Economics, 11. 23-29.

of dual labeling of all products after the introduction of the single currency."[10]

Costs associated with adaptation are also an issue. In one study by KMPG Consulting in 1999, to take one EU member state, for example U.K., which has 3,000 companies with more than 5,000 employees and assuming each spend £3.5 million on adaptation to EMU, this would total £107.4 billion. This represents 10-11% of U.K GDP.

Beginning with the fixed exchange rates between currencies, problems surround a fixed exchange rate regime, as evidenced by the breakdown of the Bretton Woods fixed exchange rate regime from 1945-1973. These problems include shocks to currencies which can push the currency out of the permitted range causing an overvaluation in which the country would have to sell reserves to reduce its value. There must be a strong level of fiscal/monetary policy set in a country, which can be a problem, for a fixed exchange rate system to be maintained. Also, under fixed systems, interest rates are equated among the member countries, yet one country can set the interest rates to be favorable to their domestic needs rather than the needs of the whole group of countries. This can cause friction among the countries as common interests of all are being dominated by one country.

Another aspect to the theory of monetary integration concerns inflation among the member states. Inflation is one of the most prominent threats to a country's economic stability and growth. Through the European Central Bank, which governs the euro, and ultimately integrates all economies of the European Union, the objective of price stability by inflation control is fulfilled. With this coordinated approach to controlling inflation by the aid of a central bank, all countries can decide and agree on a common monetary policy, with all countries interests being represented. The ECU, created by the EMS, as the neutral unit of account to measure divergence, dictates that those countries whose currency deviates too much would have to take action through the monetary policy.

[10] Whyman, Philip. (2002). Living with the Euro: the consequences for world business. Journal of World Business, 37. 208-215.

Therefore, a common fiscal policy is crucial to full economic integration and cooperation between all EU countries.

Centralization of budgets and fiscal policies is another driver behind economic integration. By centralizing budgets, a country who is suffering from the shock of a deficit would be able to regain fiscal stability by benefiting from the budget surplus of another country thus creating automatic stabilization. Stabilization is another critical aspect behind integration. The "Stability and Growth Pact" was established between the countries of the EU in 1996. In summary, this pact called for all countries to aim at achieving a balanced budget and countries with a budget deficit over 3% would be fined up to 0.5% GDP. With such strict limits on government spending, this pact stimulated much long-term fiscal discipline within the EU, which is a staple of monetary union.[2]

Other drivers behind economic integration for Europe include the various benefits that the EU will reap with total integration. Reduced transaction costs, price transparency between countries, increased efficiency, increased international competitiveness among firms in EU, and increased growth potential for the European economy. Reduced transaction costs are an especially important outcome of fiscal union as costs associated with trades between countries are substantial, amounting to billions. The European Commission estimates that, before the euro, European businesses converted $7.7 trillion/year from one EU currency to another, ultimately paying $12.8 billion in conversion charges, or .4% of European Union GDP.[3] These costs are tremendous for smaller firms whose liquidity and sophistication of banking and financial systems may be underdeveloped.[311]

The benefit of price transparency is also a vital part of monetary union. As countries economies and currencies are tied together, price differences between goods and services in various countries are more obvious, in effect creating competition across

[11] Chabot, C. (1999). Understanding the Euro- The Clear and Concise Guide to the New Trans-European Economy. New York: McGraw-Hill

markets. European consumers find comparing prices of the same goods and services across national boundaries rather cumbersome and tiring. With more integration and a single market, European consumers would find it easier to compare prices in different countries, which forces those businesses to maintain a competitive edge and produce the highest quality products with the lowest prices.

Increased efficiency in transactions and trades occurs by integration as no future plan for exchange rate fluctuation is necessary. Importers who bear a large exchange rate risk when importing goods to Europe are not faced with the burden of hedging and the costs associated with hedging. With monetary union, importers are much freer to increase imports and increase their overall business and exposure to the European markets. One example is DaimlerChrysler, an international company which reaped benefits of the lack of currency hedging costs associated with the introduction of the Euro. DaimlerChrysler saved roughly €50 million per year with the elimination of transaction and exchange rate hedging costs associated with organizational processes and projects[15]. However, importers are not the only beneficiaries. Through economic integration, firms in the EU appear increasingly attractive to international investors. Through increased liquidity in the markets, elimination of currency confusion, and an overall strengthened European economy through union, investors looking to invest in Europe will be much more likely to invest and continue with long-term investments in Euroland. With a decreased level of uncertainty in the European economic condition and currency risks due to heightened integration, the EU can be expected to have a surge of international capital investments, which will add much growth to the European integrated economy.

Presently, statistics on the European Union and the impact that economic and monetary integration has had on these countries is proving that integration is a success for these European member nations. The poorer countries of the union have shown the most improvement. The average growth rates of these countries such as Ireland, Spain, and

Portugal have been higher than that of stronger countries such as Germany. From the period 1986-1995, these three countries all had higher Real GDP numbers than that of Germany's 2.1, with Ireland having 5.1, Spain at 2.7, and Portugal at 2.2. Since being in the economic union, Ireland's GDP rate has grown rapidly and Spain's has doubled.[1] Since the economic and monetary union with the free movement of goods, services, labor, and capital; all member countries have been better off. All members have made welfare gains as a result of larger input and sales markets, and the poorer countries have benefited through massive transfers from the richer countries.[1]

While Europe has implemented the strongest level of integration, an economic and monetary union, the next level of dependence for these European nations is to adopt a common currency, the "Euro," which they did in January 1999.

Section 3.2 Common Currency

The theory behind a common currency consists of many issues and areas of discussion. While the advantages of fixing the exchange rates include elimination of exchange rate risk and reduced transaction costs, as well as the centralization of monetary policy, the disadvantages include lack of independent monetary policy for that country. The concept of a centralized monetary policy has been thought of as one of the most important benefits of fixed exchange rates. Economist D. Mario Nuti (2002) states, "a government lacking policy creditability can "borrow" creditability by anchoring the national currency to a strong and credible currency."[12] While one of the biggest threats to a country's economic condition is that of inflation, a central bank is able to provide more protection against inflation than that of an independent bank. With a fixed exchange rate and a central bank that is committed to a single monetary policy, workers and firms who set the wages and prices can more effectively forecast future prices. The result is a lower

[12] Nuti, D. Mario. (2002). A Symposium on Exchange rate regimes in transition economies: The euroization debate. Costs & Benefits of Unilateral euroization in Central Eastern Europe. The Economics of Transition, 10. 419-444

level of inflation.

Besides the basic drivers behind the theory of common currency, common currency cannot be discussed without addressing the Theory of Optimum Currency Areas. This theory's basis rests on the decision by a country of whether or not to peg or float its currency with its neighbors. Much of this decision depends on closeness of the country's ties to trading and the business cycles of its neighboring countries.[13]

The optimum currency area is defined by Frankel and Rose (1996) as "a region that is neither so small and open that it would be better off pegging its currency to a neighbor, nor so large that it would be better off splitting into sub-regions with different currencies[13]." This theory rests on the assertions that the advantages of adopting a common currency depend positively on the trade integration and the abandonment of the independence in monetary policy. There are several criteria that the Theory of Optimum Currency Area details when looking at an area to decide if it constitutes as an optimum currency area. These include exchange rate uncertainty, independence of monetary policy, and ease of labor movement between countries. Regarding the first criterion, as the trading activity between the countries increases; the risk of exchange rate uncertainty becomes a more serious issue. Within the European region, trades of goods and services have been increasing over time and will continue to increase as more countries enter into the European Union. This will cause the use of a common currency to be much more beneficial and save in millions of dollars in transaction costs. Secondly, the issue of pursing an independent monetary policy is a chief disadvantage of using a fixed exchange rate, however, as more countries economies become more integrated and will depend on each other; this point proves to be rather weak, according to Frankel and Rose. With all the member states of the European Union working together to achieve complete fiscal interdependence, this advantage of independence in monetary policy is not so beneficial.

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[13] Economic structure and the Decision to Adopt a Common Currency. Retrieved on Feb 26, 2003 from the World Wide Web: http://www.iies.su.se/publications/seminarpapers/611.pdf

As economic integration and the labor and fiscal mobility increase within the European countries, the European Union looks like an optimum currency area and one that would justify the use and benefit highly from a common currency.

Other issues and impacts surround the strategic decision for a country or set of countries to adopt a common currency. Nuti (2002) lists other benefits to adoption of a single currency including credibility, lower transaction costs, lower interest rates, greater macroeconomic stability, and greater trade and foreign investment. Lower nominal interest rates are likely with a single currency which will promote investment and growth. Both governments and private investors benefit from a common currency through the ability to borrow internationally in their domestic currency and the same currency in which the expenditure is denominated and incurred. Greater macroeconomic stability and greater trade and foreign direct investment are both benefits incurred by countries that choose to adopt a common currency. Countries are more self-regulated and many costs associated with exchange rate changes and adjustments are eliminated due to a single currency for the nations.

John C. Soper (1999) also discussed the advantages behind the single currency. According to Soper, "the strongest economic argument for implementing a single currency includes the reduction or elimination of currency-conversion transaction costs as traders move from one euroland country to another with goods and services for sale."[14] As the transaction costs fall, trade expands. Soper also adds that with the introduction of the euro, this will create an "integrated European market with 290 million customers. This market will be larger than the United States, with its 270 million consumers.[6]"

Section 3.3 Financial Integration

While a common currency leads to unification and economic stability, a common currency among countries also involves financial market integration among those

[14] Soper, John C. (1999). Macroeconomic Effects of Euro Implementation. Managerial Finance, 25. 3-7

countries.

Karolyi and Stulz (2002) define Financial Market Integration as "Markets in which cash flows have the same price regardless of where claims to the cash flows trade are said to be integrated. In such settings, assets have the same price regardless of where they are traded and no finance is local; there are no transportation costs, no tariffs, no taxes, no transaction costs, no convertibility restrictions, and no restrictions on short sales"[715] As Juan Ayuso and Roberto Blanco (2001) explain in their paper *Has financial market integration increased during the nineties?* "Perfect cross-market integration is generally understood as a situation in which there is no barrier of any kind to cross-border financial transactions, such as tariffs, taxes, restrictions on the trading of foreign assets, information costs or any other cost that makes it more difficult to trade across countries than within them."[16]

Why do countries want to participate in integrating their financial markets with other surrounding countries? As Shigemitsu Sugisaki, Deputy Managing Director of the International Monetary Fund, stated, "Economic theory tells us that the free movement of capital permits a more efficient global allocation of savings and directs resources toward their most efficient use. This movement raises the level of welfare in both the sending country and in the receiving country by creating opportunities for portfolio diversification, risk-sharing, and inter-temporal trade."[17] By removing trade barriers, this leads to a reduction in business costs as well as simulating efficiency and creating more jobs and wealth. Increased financial market integration leading to a single market promotes greater competition and liberalization which in turn creates lower prices for customers in those markets as well as creates a larger market by which customers have a

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[15] Karolyi, G.A. & Stulz, Rene. (2002). International Capital Markets, 1. 1-2.
[16] Ayuso, Juan & Blanco, Roberto. (2001). Has financial market integration increased during the nineties? Journal of International Financial Markets, Institutions and Money, 11. 265-269
[17] The Benefits and Risks Associated with the Wider Integration of International Financial Markets. International Monetary Fund Retrieved Jan 27, 2003 from World Wide Web: http://www.inf.org/external/np/speeches/1998/120598.htm

much larger choice. More market integration also breaks down monopolies and cartels and unifies national standards. "[18]

Just as there are many benefits to international financial market integration, there are also various costs and problems associated with such a large, widespread type of integration as that of the financial markets. Sylvester Eijffinger and Jan. Lemmen (2000) discussed these various problems in their publication *International Financial Integration.* These problems include constrains on national choices regarding monetary and fiscal policies as well as the possibility of excessive borrowing through integrated markets. Another issue posed with such an open, integrated market is the decision of whether to control interest rates or exchange rates. Taxation is also an issue as it is more difficult to tax international capital in relation to more stable factors of production. Eijffinger and Lemmen also point out that "dissimilar legal structures" pose a problem as a part of the financial structure of a country depends on the "legal rights of shareholders and creditor, as well as on the degree to which the relevant laws are enforced."[19]

For the European Union and the member countries, the culmination of integration was that of complete financial market integration. This was the last and final step to completing the definition of an "Economic and Financial Union for Europe."
This was always the overriding goal and intent from the establishment of the European Union. As stated by Dr. Sirkka Hämäläinen (2002), member of the Executive Board of the European Central Bank at the European Asset Management Conference in Frankfurt, Germany, "More generally, well-integrated financial markets are an obvious prerequisite for an optimal allocation of capital in the European Union. This itself is necessary to achieve the goals of the Community, among which- and I quote from the Treaty establishing the European Community- "to promote economic and social progress and a

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[18] McCormick, J. (2002).Understanding the European Union- A Concise Introduction. New York: PALGRAVE

[19] Financial Market Integration in the US: Lessons for Europe? Kiel Institute of World Economics Retrieved Jan 27, 2003 from World Wide Web: http://www.uni-kiel.de/ifw/pub/kap/2000/kap1004.pdf

high level of employment, and to achieve balanced and sustainable development, in particular through the creation of an area without internal frontiers."[20]

There are many reasons with which to build a case as to why Europe would want to pursue complete financial market integration. An integrated sector will lower the cost of capital for 18 million businesses in the EU as well as contribute to an annual economic growth with about 1% annually.[21] Financial market integration will increase the global competitiveness for Europe, attract more foreign investment, and also help to develop the small and midsize businesses of Europe. Social benefits such as better pensions, higher returns for individual investors, and more venture capital will also be gained by integration. Most of all for Europe, economic power and stability are the greatest benefits obtained through complete financial market integration. As stated by Commissioner Frits Bolkestein, member of the European Commission, "In order to better withstand external shocks of whatever kind, we must make Europe a pole of economic stability. Financial integration will help us achieve this, now and in the future." [22]

Section 3.4 Concluding Remarks

In this chapter, I discuss the three main areas pertaining to Economic and Financial Integration in relation to the Euro. Section 3.1, Economic Integration discusses various aspects to the theory behind economic integration including various drivers associated with economic integration in general, as well as drivers associated specifically with economic integration in Europe. I include statistics on certain country control factors such as GDP and other examples to illustrate my points. Section 3.2, Common Currency focuses on the theory behind the adoption of a common currency for a country,

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[15] DamilerChrysler Completes Introduction of the EURO. Retrieved April 20, 2003 from World Wide Web: http://www.damilerchrysler.com/news/top/2001/t11126_e.htm

[20] Integrating Europe's Financial Markets. ECB. Retrieved Jan. 27, 2003 from the World Wide Web: http:www/ecb/int/key/02/sp020320.htm

[21] European economic and financial integration: State of play before Barcelona. EUROPA Retrieved Jan 27, 2003 from World Wide Web: http://europa.eu.int/comm/internal_market/en/speeches/02-99.htm

[22] Integration of Financial Markets in Europe. EUROPA. Retrieved Jan 28, 2003 from World Wide Web: http://europa.eu.int/comm/internal_market/en/speeches/spch331.htm

and discusses factors and issues, including advantages and disadvantages, which lead countries to make the decision of whether or not to adopt a common currency. In the final section, Section 3.3, Financial Integration, I define Financial Market Integration and I ask the question, "Why do countries want to integrate their financial markets?" I attempt to answer this question and confer reasons as to why countries, especially those in Europe would want to engage in integration. I discuss both positive and negative aspects to European economic integration.

Chapter 2 and 3 set the background for the statistical analysis and the next chapter, Chapter 4, entitled "Empirical Analysis."

CHAPTER 4

EMPIRICAL ANALYSIS

Section 4.1 Introduction

In this chapter, there are two fundamental questions and hypotheses that I will pose and answer in relation to the Euro and the financial markets of Europe and the world:

1. Has the introduction of the Euro changed volatility in the stock, bond and interest rate markets?

2. Which countries benefited the most from the Euro and Why?

My hypothesis is that the Euro has reduced volatility in all these markets: stock, bond and interest rate in all countries with the introduction of the Euro. My second hypothesis is that the European countries who are members of the Euro and those who engage in more international capital and trade flows benefited more than those countries that do not. Countries with more fragile economies, including those with more volatile exchange rates and a slower, poorer rate of growth should have benefited more than countries with stronger economies as they already had stable economies before the introduction of the euro. I will also address other institutional and country specific factors which will differentiate those countries that benefited the most from those that did not.

Section 4.2 Methodology

Volatility of the market is regarded as the statistical measure of a market index to rise or fall sharply within a short period of time. Several measures can be used to measure the volatility of a market which includes the standard deviation of the prices or

returns on the market, and the overall fluctuation in the prices of an index over a specific time period. I gathered data from stock market indices of the 12 Euro countries as well as 17 Non-Euro countries using Datastream International. I calculated percent changes in daily returns which were used to run the variance function in Excel to calculate the statistical variance in the daily returns. Variance is the measure of the variability or volatility away from the average of the data calculated. I calculated the variance of the returns for both the Post-Euro period, from 1/1/1999 to 1/1/2003, and the Pre-Euro period, from 1/1/1996 to 12/31/1998. The data was separated into these periods in order to analyze and identify any significant differences in the variances. Next, a variance ratio was calculated with the numerator as variance post-euro and the denominator as variance pre-euro. This compared the volatility in the post-euro period to that of the pre-euro period. Standard Deviation, which is a standardized measure of the volatility of the stock, was also calculated for these countries. A higher deviation implies higher volatility. Standard deviation for post and pre-euro periods was calculated to analyze major changes in the data.

The same procedure was completed on data for Euro and Non-Euro countries using Morgan Stanley Capital International Bonds Indexes, which are denominated in Local or Euros and in US dollar denominations as well as short-term interest rates for Euro and non-Euro countries. Short term interest rates included interbank and overnight interest rates. Short term rates were chosen as they provided the right base to evaluate the true volatility of the interest rate market rather than longer term rates featured in the bond indexes.

The variance ratios are distributed statistically as a F-Distribution and for each ratio I computed the associated p-value. The p-value estimates the probability that a variant or a statistic would assume a value greater than or equal to the observed value strictly by chance. This is a very important calculation in my analysis since one of the main objectives of the overall analysis is to state with a fair amount of certainty, if the volatility of the various financial markets in Euro and non-Euro countries were impacted by the introduction of the Euro, or if the volatility in the markets is simply by random chance or occurrence. Therefore, by calculation of the p-value I was able to evaluate the amount of chance that was involved in the calculations. A scale was used to determine, in the results, the amount and degree of certainty of chance and non-chance.

Non-chance means the definite involvement of the Euro as an element of impact in the volatility of the markets. A star system was utilized to present the results. Below (< 10%) or Above (>90%) = *, Below (<5%) or Above (>95%) =**, and Below (<1%) or Above (>99%) =***. A p-value less than 10% or greater than 90% indicates a significant break in the data and a low level of confidence that the volatility change is due to chance but that the Euro has had a significant influence in the volatility in the markets. A p-value of less than 1% or greater than 99% indicates a very high level of confidence that the volatility in the markets is due to chance rather than a specific influence.

All statistical measures calculated here were critical factors in establishing the base for regression analysis on the stock, bond, and short term interest rate markets. Linear Regression determines and illustrates a relationship between two variables by fitting a linear equation to the observed data. One variable serves as the explanatory or independent variable and the other as the dependent variable. Linear Regression is

conducted on the presented data for Stocks, Bonds Local, Europe, and US denominated, and Short Term Interest Rates, as the objective of the analysis is to determine if there is a relationship between the Euro and market volatility, which linear regression would statistically be best able to measure.

Linear Regression was calculated using the Data analysis tools of Regression in Microsoft Excel software. Inputs included the variance ratio for each country, the natural log of the variance ratio, and dummy variables for Euro and non-Euro countries. The Euro countries carried a dummy variable of 1 and the non-Euro countries carried a dummy variable of 0. Other variables were included to project any effect they would have on the overall results of volatility. These variables were Pre-Euro Volatility, GDP-2001, Inflation-2001, Exports/GDP-2001, and Imports/GDP- 2001. Three separate regressions were conducted on all markets. While all regression experiments included the natural log of the variance ratio, various other variables were included for each regression.

For the first regression, only the dummy variable was added. This measured the difference in volatility between the Euro and non-Euro countries simply based on the variance ratios of those countries. The second regression included Pre-Euro Volatility. This regression accounted for the possibility that the impact on volatility was due to random chance, taking into account the volatility of the country before the Euro was introduced. If the country had a low volatility beforehand, than an expected or actual decrease in volatility due to the introduction of the Euro may not confidently be confirmed. The third regression included several other variables along with Pre-Euro Volatility, including GDP, Inflation, Exports/GDP, and Imports/GDP. These country

specific factors were very important to include in order to evaluate whether or not they had a significant impact on the overall market volatility, in which the intro of the Euro would not completely account for the change.

Section 4.3 Data

Table 1 begins with the description of the Indices that I examined. Panel A consists of the stock indices of Euro and non-Euro countries. Panel B consists of the bond indices and Panel C highlights the short term interest rate indices. Each panel describes the index with the name, the mneomic code, used to research in Datastream International, as well as the available dates of data. Tables 2, 3A, 3B, and 4 include the set of Euro and non-Euro countries and lists the standard deviations, number of days included in the pre-euro periods and post-euro periods, variance ratios, and p-values for each country. A star system as described previously was utilized and included in tables 2, 3A, 3B, and 4 to indicate the level of confidence that the volatility of the index was due to chance or not for that country. A median score was also included to easily indicate what the general trend was for the set of Euro countries and the set of non-Euro countries. Also, it is important to note that table 3A includes both Local and Euro denominations for the bond indices and table 3B is the bond indices in US dollar denominations.

Tables 5 through 8 are the results of linear regression analysis conducted on Euro and non-Euro countries for stock, bond, and short term interest rate markets. Table 5 indicates the results for the Stock market return volatility regression results for Euro and non-Euro countries. Table 6 indicates the results for the US-dollar denominated Bond return volatility regression results for Euro and non-Euro countries. Table 7 indicates the

results for the Local currency denominated bond return volatility regression results for Euro and non-Euro countries, and table 8 indicates the short term interest rate volatility regression for Euro and non-Euro countries. Each table encompass the natural log of the variance ratio and the Euro dummy variable, as well as several country specific control factors for Euro and non-Euro countries: Pre-euro volatility, GDP- 2001, Inflation-2001, Exports/GDP- 2000, and Imports/GDP-2000. These years indicated consisted of the most current data for the countries chosen to analyze.

Considering the procedure related to the linear regression analysis, I completed 3 regressions for each market. Through the regressions, one variable builds upon another. As I progress to the third analysis for each market and each country, more factors relating specifically to a possible change in volatility, factors which could have an impact on the volatility within the markets such as GDP, Inflation, Exports/GDP, and Imports/GDP are introduced into the analysis. However, as will be illustrated and discussed in the next section, these factors had no significant impact on the overall results.

Section 4.4 Results

Overall, the results of this experiment were rather inconsistent with the stated hypothesis. To begin, in the stock market, the post-euro volatility, or the standard deviation, of both Euro and Non-Euro countries was higher than the volatility before the introduction of the Euro. This is in opposition to the hypothesis that with the introduction of a single currency, the volatility should be reduced. A single currency should provide stability and more integrated financial systems and policies, for both Euro countries and

Non-Euro countries so an increase of 13% for Euro countries and 8% for Non-Euro countries was unexpected.

In regards to the variance ratios and p-values for both sets of countries for the stock markets (Table 2), the Euro countries had a slightly higher median variance ratio at 1.23 than the Non-Euro countries with a median of 1. However, the p-values for both sets were very different but resulted in the same level of confidence concerning the volatility being due to chance. In my analysis of the variance ratios and the stock market, 81.8%, 9 out of 11 of the Euro countries and 92.8%, 13 out of 14 of the Non-Euro countries exhibited a p-value indicating a high level of confidence that the volatility in the markets was due to chance (Table 2). In the bond market-US, 96.7, 30 out of 31 of the Euro countries and 71.4%, 10 out of 14 of the non-Euro countries exhibited p-values with a very high level of confidence of the volatility being due to chance (Table 3B). In the bond market Local/Euro, 95%, or 19 out of 20 of the Euro countries and 56%, or 5 out of 9 countries exhibited p-values with a very high level of confidence of the volatility being due to chance (Table 3A). In regards to the short term interest rate market, 7 out of 10, 70% of Euro countries and 7 out of 9, or 77.8% of the Non-Euro countries resulted in a high level of confidence in chance volatility (Table 4). The median p-value for the Euro countries was .00087, where the median value for the Non-Euro countries was .50590. However, as stated above concerning the star system, these values constitute ***, in which there is a very high level of confidence that the volatility within the market is due to chance rather than to a specific factor, such as the introduction of the Euro. Therefore, the results indicate that there is no certainty with which to attribute any

volatility changes within the equity markets to the Euro in either the Euro or Non-Euro countries.

The Bond market was broken in the Local/Europe and the US denominated bond markets for Euro and Non-Euro countries (Table 3A, 3B). The results for the Local/Europe and US Bond markets of Euro countries were similar to that of the Stock Market. There was a marginal 1% difference between the pre and post euro volatilities for the Local/Europe bonds and a 2% difference for the US bonds. The variance ratio was considerably higher for the US bonds but the p-values for both were very similar. The p-values for both were also very small with .000126 and .0000 for the Local/Europe and US respectively. Again, this indicates a high level of confidence of the volatility being due to chance. The Non-Euro countries contained a bit more intriguing data. The variance ratios between the Local/Europe and US bonds were similar at .9706 and 1.20 respectively, but the median p-values were very different. The p-value for the Local/Europe bond was .6734, where the US p-value was .00333. With the Local/Europe bonds, there is a break in the data, and there is a lower level of confidence that the variability is due to chance but rather has a significant factor involved in its variability. However, with the US bonds, it can be said that the variability is due to chance more than any specific factor involved.

The results for the Short Term Interest Rates were very different than that of the Stock and Bond Markets, especially concerning the Pre/Post Euro volatilities (Table 4). The Euro countries experienced an increase in volatility in the interest rates by 7% after the Euro was introduced but the Non-Euro countries experienced a decline in volatility of 62%, from 82% pre-euro to 24% post euro. Though many of the Non-Euro countries did

not provide enough information to accurately conduct tests and calculate results, for those countries that did have enough information, this proved to be a dramatic change. The variance ratios were also very different, yet the p-values were not. The Euro countries exhibited a value of .00000051892 with the Non-Euro countries at 1. Both these p-values again resulted in a high level of confidence that the volatility change was due to chance, just like that of the stock and bond markets.

In regards to the Regression Analysis for the Stock market, the results were rather uneventful (Table 5-8). There appeared to be no significant differences in volatility between the Euro and Non-Euro countries in regards to the stock, bond and short-term interest rate markets from pre-euro to post-euro. Concerning the stock and interest rate markets, countries which tended to have rather high pre-euro volatility resulted in lower volatility post-euro. However, this was not the same for the bond market. The bond market resulted in countries that had higher pre-euro volatility continued to have high volatility post-euro. The introduction of the euro however, did not have a significant influence in the overall increase in the volatility. Several reasons or explanations can be proposed to account for changes in the volatility. One is just statistical error. Countries with unusually high (low) pre-euro volatility could possibly have large positive (negative) volatility estimation errors. Another explanation is economics. Countries that exhibited high (low) pre-euro volatility would implement monetary and fiscal policies in that country to reduce (increase) volatility of the market.

In general, there are negligible differences in volatilities pre vs. post euro for Euro and non-Euro countries; therefore, the euro had no significant influence on volatility changes for Euro and non-Euro countries.

Section 4.5 Conclusions

Returning to the original objective, there were two questions proposed along with the hypotheses. Those questions were

1. Has the introduction of the Euro changed volatility in the stock, bond and interest rate markets?

2. Which countries benefited the most from the Euro and Why?

My hypotheses were:

1. The Euro has reduced volatility in all these markets: stock, bond and interest rate in all countries with the introduction of the Euro.

2. The European countries who are members of the European Union and those who engage in more international capital and trade flows benefited more than those countries that do not.

Upon experimentation and results, it appears that the euro has not had a significant influence on the volatility in any of the markets, stock, bond, or short term interest rate. No country specific factors such as GDP, Exports/GDP, Imports/GDP, or even Inflation proved to have a significant influence on the change in the volatility within any of the markets for both countries who are part of Euroland and those which are non-Euroland countries.

CHAPTER 5

SUMMARY AND CONCLUSIONS

The objective of this thesis was to determine whether the introduction of the Euro had an impact on international financial markets. The overall conclusion is that it has not. Based on my analysis of the history of economic and financial integration in Europe and on the existing theoretical and empirical research on common currencies, I proposed the hypothesis that volatility within the markets should have been reduced due to the introduction of a single currency. The reasons behind this hypothesis include the elimination of conversion costs and exchange rate risk between those countries adopting the euro, as well as greater overall market integration within the Euro countries. My empirical analysis compared daily stock return, bond return, and interest rate volatility before and after the January 1, 1999. Through statistical analysis, such as variance ratios and linear regression models, the results indicate that the changes in volatility within the stock, bond, and short term interest rate markets, while negligible for both Euro and non-Euro countries, cannot be confidently attributed to the introduction of the Euro. With the addition of other country specific factors into the regression models, the results remained very similar. Therefore, the overall conclusion is that the volatility within the markets might possibly be due to chance but cannot be attributed to the introduction of a single currency, the Euro.

Chapter 1 was a short introduction, laying the premise for which I would elaborate on throughout the rest of the chapters. I posed two questions and stated my hypothesis for which the project and the results would be based around. I guided the reader through the various sections of each chapter and provided a brief description of each section. Chapter 2 proceeded into the underlying history behind the euro and traced the most important events and occurrences that led up to the introduction of the Euro. I began with "The Early Years" dating back to the end of the 60's beginning of the 70's and progressed into the later 70's with the creation of the European Monetary System. A section discussing The Single European Act of 1986 and a section on The Maastricht Treaty are also included in Chapter 2, as these are two of the most crucial documents in the history of economic and monetary integration as well as the creation of the Euro. Chapter 2 concluded with "The Euro Launch," which highlighted the occurrences right around the time of the introduction of the Euro, and "Further Integration in Europe" which included current trends with the Euro as well as some statements made about the Euro from members of the European Central Bank, which is the closest working government body to the new currency. Also included in Chapter 2 is a "Chronology of the Euro" and a "Chronology of European Organizations and Member Nations" and a "Chronology of Treaties and Reports."

Proceeding forth, Chapter 3 discussed the overall concept and theory behind Economic Integration. In this chapter, I attempted to discuss and explain on a very broad level with respect to Economic integration and began to relate it to the economic situation of Europe and the creation of the Euro. Next I proceeded to the theory behind common currency, in Section 3.2, and related common currency to the previous section on

economic integration and then integrated the relation between a common currency, Europe, and the Euro. In the final section I discussed Financial Market Integration, beginning in a general sense and then relating it back to a common currency and general economic integration, Europe and the Euro. In essence, all sections in this chapter are very intertwined and build upon each other.

Chapter 4 completely illustrated the empirical analysis completed with respect to the stock, bond, and interest rate markets. Chapter 4 began with the Methodology, which included the data extraction and pre-analysis completed such as variances, variances ratios, and p-values, all which were critical to ultimately proceed to linear regression. Section 4.3 Data, explained what is included in each table of analysis, and Section 4.4 Results, is the interpretation of the analysis. I included some interesting figures and percentages in regards to Euro and non-Euro countries to more clearly illustrate my conclusions. In Section 4.5, Conclusions, I reposed my questions and provided a summary of the overall results and my conclusions.

In general, the results and conclusions concerning volatility did not correlate with the proposed hypothesis. There are many possible reasons to account for this lack of strong relationship between volatility within the stock, bond, and short term interest rate markets and Euro and non-Euro countries. One reason is simply the time period was too short. As I gathered data three years prior to the introduction of the Euro and three years after, enough time to most accurately test the association between volatility and Euro/non-Euro markets may not have elapsed. As the introduction of the Euro was a significant event for Europe, such an event may be more long term in nature in regards to the overall economic impact created by the introduction of the Euro. Another

explanation concerns the benchmarks used in the analysis. Better benchmarks to analyze the volatility jumps in Euro and non-Euro countries may have been relative to other countries such as those in North America, Asia, and emerging markets, along with the Euro 12 and non-Euro 12. This might have provided more accurate results, especially since with the introduction of the Euro the markets within Europe have behaved much more like those of the United States and other countries that already have existing integrated markets. The use of the variance ratios and linear regression tests may also have not been the most accurate tests to utilize. The linear regression tests may have been too simple in regards to this type of analysis, since they are good for single jumps in volatility assuming that volatility remained constant before and after, but not for more complex situations and variables inherent in these markets. Using models which accounted for more dynamics that occur within the stock, bond, and short term interest rate markets over time and judging for a shift around the time of the introduction of the Euro may have been more appropriate in this analysis.

TABLE 1- DATA DESCRIPTION

This table explains the indices and data used for the empirical analysis of the stock market, bond market and Short-Term Interest Rates of Euroland and Non-Euroland countries. Source: DataStream International

Panel A: Stock Market Indices

EURO

Country	**Name of index**	**Code (Mneomic)**	**Available Dates**
Austria	DS Market	TOTMKOE	1/1/1996-1/1/2003
Belgium	Brussels All Share- Price Index	BRUSIDX	1/1/1996-1/1/2003
Finland	Helsinki- HEX General	HEXINDX	1/1/1996-1/1/2003
France	CAC 40	FRACAC40	1/1/1996-1/1/2003
Germany	DAX 30 Performance	DAXINDX	1/1/1996-1/1/2003
Greece	Athens SE General Share	GRAGENL	1/1/1996-1/1/2003
Ireland	Ireland SE Overall	ISEQUIT	1/1/1996-1/1/2003
Italy	MILAN MIB Storico General	ITMHIST	1/1/1996-1/1/2003
Luxembourg	Luxembourg SE General	LUXGENI	1/4/1999-1/1/2003
Netherlands	CBS All Share General	CBGKGEN	1/1/1996-1/1/2003
Portugal	Portugal PSI General	POPSIGN	1/1/1996-1/1/2003
Spain	Madrid SE General Index	MADRIDI	1/1/1996-1/1/2003

NON-EURO

Country	**Name of index**		
Bulgaria	BSE SOFIX	BSSOFIX	10/20/2000-1/1/2003
Crotia	Crotia Corbex	CTCROBE	1/2/1997-1/1/2003
Cyprus	N/A	N/A	N/A
Czech Republic	Prague PX 50	CZPX50I	1/1/1996-1/1/2003
Denmark	Cophenhagen KFX	DKKFXIN	1/1/1996-1/1/2003
Estonia	Estonia ARIPAEV	ESARIPA	1/1/1996-1/1/2003
Hungary	Budapest (BUX)	BUXINDX	1/1/1996-1/1/2003
Iceland	Iceland SE ICEX All Share	ICEXALL	1/1/1996-1/1/2003
Isreal	Tel Aviv SE General	ISTGNRL	1/1/1996-1/1/2003

Latvia	Latvia RICI	LVRICIL	11/3/1997-1/1/2003
Norway	N/A	N/A	N/A
Romania	Romania BET	RMBETRL	9/19/1997-1/1/2003
Slovakia	Slovakia SAX 16	SXSAX12	1/1/1996-1/1/2003
Slovenia	Slovenian Exchange Stock	SLOESBI	1/1/1996-1/1/2003
Sweden	Stockholemborsen All Share	SWSEALI	1/1/1996-1/1/2003
Switzerland	Swiss Market	SWISSMI	1/1/1996-1/1/2003
UK	FTSE 100	FTSE100	1/1/1996-1/1/2003

Panel B: Bond Market Indices

EURO

Country	Currency	Name of index	Code (Mneomic)	Available Dates
Austria	Local currency	MSCI Austria 10Y+ Total Return Index	MBSOEEL	6/30/1997-1/1/2003
Belgium	Local currency	MSCI Belgium 10Y+ Total Return Index	MBSBGEL	1/1/1996-1/1/2003
Finland	Local currency	MSCI Finland 10Y+ Total Return Index	MBSFNEL	1/1/1996-1/1/2003
France	Local currency	MSCI France 10Y+ Total Return Index	MBSFREL	1/1/1996-1/1/2003
Germany	Local currency	N/A	N/A	N/A
Greece	Local currency	MSCI Greece 10Y+ Total Return Index	MBSGREL	5/29/1998-1/1/2003
Ireland	Local currency	MSCI Ireland 10Y+ Total Return Index	MBSIREL	1/1/1996-1/1/2003
Italy	Local currency	MSCI Italy 10Y+ Total Return Index	MBSITEL	1/1/1996-1/1/2003
Luxembourg	Local currency	N/A	N/A	N/A
Netherlands	Local currency	N/A	N/A	N/A
Portugal	Local currency	MSCI Portugal 10Y+ Total Return Index	MBSPTEL	4/30/1998-1/1/2003
Spain	Local currency	MSCI Spain 10Y+ Total Return Index	MBSESEL	1/1/1996-1/1/2003
Austria	US Dollar	MSCI Austria 10Y+ ($) Total Return Index	MBSOEE$	6/30/1997-1/1/2003
Belgium	US Dollar	MSCI Belgium 10Y+ ($) Total Return Index	MBSBGE$	1/1/1996-1/1/2003
Finland	US Dollar	MSCI Finland 10Y+ ($) Total Return Index	MBSFNE$	1/1/1996-1/1/2003
France	US Dollar	MSCI France 10Y+ ($) Total Return Index	MBSFRE$	1/1/1996-1/1/2003
Germany	US Dollar	MSCI Germany 10Y+ ($) Total Return Index	MBSBDE$	1/1/1996-1/1/2003
Greece	US Dollar	MSCI Greece 10Y+ ($) Total Return Index	MBSGRE$	5/29/1998-1/1/2003
Ireland	US Dollar	MSCI Ireland 10Y+ ($) Total Return Index	MBSIRE$	1/1/1996-1/1/2003
Italy	US Dollar	MSCI Italy 10Y+ ($) Total Return Index	MBSITE$	1/1/1996-1/1/2003
Luxembourg	US Dollar	N/A	N/A	N/A
Netherlands	US Dollar	MSCI Netherlands 10Y+ ($) Total Return Index	MBSNLE$	1/1/1996-1/1/2003
Portugal	US Dollar	MSCI Portugal 10Y+ ($) Total Return Index	MBSPTE$	4/30/1998-1/1/2003
Spain	US Dollar	MSCI Spain 10Y+ ($) Total Return Index	MBSESE$	1/1/1996-1/1/2003
Austria	Euro	MSCI Austria 10Y+ (E) Total Return Index	MBSOEEE	6/30/1997-1/1/2003
Belgium	Euro	MSCI Belgium 10Y+ (E) Total Return Index	MBSBGEE	1/1/1996-1/1/2003

Finland	Euro	MSCI Finland 10Y+ (E) Total Return Index	MBSFNEE	1/1/1996-1/1/2003
France	Euro	MSCI France 10Y+ (E) Total Return Index	MBSFREE	1/1/1996-1/1/2003
Germany	Euro	MSCI Germany 10Y+ (E) Total Return Index	MBSBDEE	1/1/1996-1/1/2003
Greece	Euro	MSCI Greece 10Y+ (E) Total Return Index	MBSGREE	5/29/1998-1/1/2003
Ireland	Euro	MSCI Ireland 10Y+ (E) Total Return Index	MBSIREE	1/1/1996-1/1/2003
Italy	Euro	MSCI Italy 10Y+ (E) Total Return Index	MBSITEE	1/1/1996-1/1/2003
Luxembourg	Euro	N/A	N/A	N/A
Netherlands	Euro	MSCI Netherlands 10Y+ (E) Total Return Index	MBSNLEE	1/1/1996-1/1/2003
Portugal	Euro	MSCI Portugal 10Y+ (E) Total Return Index	MBSPTEE	4/30/1998-1/1/2003
Spain	Euro	MSCI Spain 10Y+ (E) Total Return Index	MBSESEE	1/1/1996-1/1/2003

NON-EURO

Country	**Currency**	**Name of index**	**Code (Mneomic)**	**Available Dates**
Czech Republic	Local	MSCI Czech Republic 10Y+ Total Return Index	MSCZCEL	2/28/2001-1/1/2003
Denmark	Local	MSCI Denmark 10Y+ Total Return Index	MBSDKEL	1/1/1996-1/1/2003
Hungary	Local	N/A	N/A	N/A
Norway	Local	N/A	N/A	N/A
Poland	Local	MSCI Poland 10Y+ Total Return Index	MBSPOEL	9/30/2002-1/1/2003
Sweden	Local	MSCI Sweden 10Y+ Total Return Index	MBSSDEL	1/1/1996-1/1/2003
Switzerland	Local	MSCI Switzerland 10Y+ Total Return Index	MBSSWEL	1/1/1996-1/1/2003
UK	Local	MSCI UK Gilts 10Y+ Total Return Index	MBSUKEL	1/1/1996-1/1/2003
Czech Republic	U.S. dollar	MSCI Czech Republic 10Y+ ($) Total Return Index	MBSCZE$	2/28/2001-1/1/2003
Denmark	U.S. dollar	MSCI Denmark 10Y+ ($) Total Return Index	MBSDKE$	1/1/1996-1/1/2003
Hungary	U.S. dollar	MSCI Hungary 10Y+ ($) Total Return Index	MBSHNE$	1/31/2001-1/1/2003
Norway	U.S. dollar	MSCI Norway 10Y+ ($) Total Return Index	MBSNWE$	1/1/1996-1/1/2003
Poland	U.S. dollar	MSCI Poland 10Y+($) Total Return Index	MBSPOE$	9/30/2002-1/1/2003
Sweden	U.S. dollar	MSCI Sweden 10Y+ ($) Total Return Index	MBSSEE$	1/1/1996-1/1/2003
Switzerland	U.S. dollar	MSCI Switzerland10Y+ ($) Total Return Index	MBSSWE$	1/1/1996-1/1/2003
UK	U.S. dollar	MSCI UK Gilts 10Y+ ($) Total Return Index	MBSUKE$	1/1/1996-1/1/2003
Czech Republic	Euro	MSCI Czech Republic 10Y+ (E) Total Return Index	MSCZCEE	2/28/2001-1/1/2003
Denmark	Euro	MSCI Denmark 10Y+ (E) Total Return Index	MBSDKEE	1/1/1996-1/1/2003

Hungary	Euro	MSCI Hungary 10Y+ (E) Total Return Index	MBSHNEE	1/31/2001-1/1/2003
Norway	Euro	MSCI Norway 10Y+ (E) Total Return Index	MBSNWEE	1/1/1996-1/1/2003
Poland	Euro	MSCI Poland 10Y+ (E) Total Return Index	MBSPOEE	9/30/2002-1/1/2003
Sweden	Euro	MSCI Sweden 10Y+ (E) Total Return Index	MBSSEEE	1/1/1996-1/1/2003
Switzerland	Euro	MSCI Switzerland 10Y+(E) Total Return Index	MBSSWEE	1/1/1996-1/1/2003
UK	Euro	MSCI UK Gilts 10Y+ (E) Total Return Index	MBSUKEE	1/1/1996-1/1/2003

Panel C: Short Term Interest Rates

EURO

Country	**Name of index**	**Code (Mneomic)**	**Available Dates**
Austria	Austria VIBOR Overnight Offered Rate	ASVIBON	1/1/1996-1/1/2003
Belgium	Belgium Euro-Franc T/N	ECBFRST	1/1/1996-1/1/2003
Finland	Finland Interbank W/A Overnight-Middle Rate	FINWAON	1/1/1996-1/1/2003
France	France Euro-Franc S/T	ECFFRST	1/1/1996-1/1/2003
Germany	Germany Euro-Mark S/T	ECWGMST	1/1/1996-1/1/2003
Greece	N/A	N/A	N/A
Ireland	Ireland Interbank Overnight Offered Rate	EIREDON	1/1/1996-1/1/2003
Italy	Italy Euro-Lira T/N	ECITLST	1/1/1996-1/1/2003
Luxembourg	LUX SE Bonds (Euro) Short Term- Red. Yield	LXSTECU	1/1/1996-1/1/2003
Netherlands	Netherland Euro- GLDR T/N	ECNLGST	1/1/1996-1/1/2003
Portugal	Portugal MoneyMarket Overnight- Middle Rate	PORONRT	1/4/1999-1/1/2003
Spain	Spain Interbank Overnight Rate	ESMIBON	1/1/1996-1/1/2003

NON-EURO

Country	**Name of index**		
Bulgaria	N/A	N/A	N/A
Croatia	N/A	N/A	N/A
Cyprus	N/A	N/A	N/A
Czech Republic	Czech Republic Interbank O/N- Middle Rate	PRIBKON	1/1/1996-1/1/2003
Denmark	Denmark Euro-Krone 1 week (LDN:FT)	ECDKN7D	1/1/1996-1/1/2003
Estonia	N/A	N/A	N/A
Hungary	Hungary Interbank Overnight- Middle Rate	HNIBKON	1/1/1996-1/1/2003
Iceland	N/A	N/A	N/A

Israel	N/A	N/A	N/A
Latvia	N/A	N/A	N/A
Norway	Norway Interbank T/N (Nominal)- Middle Rate	NWIBNTN	1/1/1996-1/1/2003
Poland	Poland Interbank Overnight- Middle Rate	POIBKON	1/1/1996-1/1/2003
Romania	N/A	N/A	N/A
Slovakia	Slovak Republic Interbank 1 day- Middle Rate	SXIBK1D	1/1/1996-1/1/2003
Slovenia	N/A	N/A	N/A
Sweden	Sweden Interbank Tomorrow Next - Middle Rate	SIBORTN	1/1/1996-1/1/2003
Switzerland	Switzerland Euro- FRC 1 week (LDN:FT)	ECSWF7D	1/1/1996-1/1/2003
UK	UK Interbank Overnight- Middle Rate	LDNIBON	1/1/1996-1/1/2003

Table 2 Stock Data- Pre/Post Euro Volatility & Variance Ratios

STOCKS

EURO COUNTRY	**Pre-Euro** Std. Deviation	# of days	**Post-Euro** Std. Deviation	# of days	**Variance Ratio**	**P-Value**	**Stars**
Austria	0.0071	783	0.0095	1043	0.56	1.00000	***
Belgium	0.0090	783	.0115	1043	1.64	0.00000	***
Finland	.0154	783	.0281	1043	3.32	0.00000	***
France	.0130	783	.0166	1043	1.63	0.00000	***
Germany	.0142	783	.0184	1043	0.6	1.00000	***
Greece	.0181	783	.0187	1043	1.07	0.15134	*
Ireland	.0101	783	.0117	1043	1.36	0.00000	***
Italy	.0143	783	.0126	1043	0.77	0.99995	***
Luxembourg	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Netherlands	.0131	783	.1058	1043	1.47	0.00000	***
Portugal	.0111	783	.0105	1043	0.9	0.94444	**
Spain	.0129	783	.0143	1043	1.23	0.00087	***
MEDIAN	.0130	783	.0143	1043	1.23	0.00087	***

NON-EURO COUNTRY	Pre-Euro Std. Deviation	# of days	Post-Euro Std. Deviation	# of days	Variance Ratio	P-Value	Stars
Bulgaria	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Croatia	.0238	520	.0186	1043	0.61	1.00000	***
Cyprus	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Czech Republic	.0110	783	.0134	1043	1.61	0.00000	***
Denmark	.0105	783	.0127	1043	1.47	0.00000	***
Estonia	.0285	783	.0117	1043	0.17	1.00000	***
Hungary	.0239	783	.0163	1043	0.46	1.00000	***
Iceland	0.0051	783	0.0071	1043	1.9	0.00000	***
Israel	.0128	783	.0118	1043	0.85	0.99169	***
Latvia	.0203	303	.0125	1043	0.38	1.00000	***
Norway	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Romania	.0240	334	.0178	1043	0.55	1.00000	***
Slovakia	.0130	783	.0153	1043	1.39	0.00000	***
Slovenia	.0162	783	0.0090	1043	0.31	1.00000	***
Sweden	.0126	783	.0168	1043	1.78	0.00000	***
Switzerland	.0129	783	.0138	1043	1.15	0.02011	*
UK	0.0099	783	.0135	1043	1.88	0.00000	***
MEDIAN	.0129	783	.0137	1043	1.00	0.50590	***

Table 3A-Bond Data- Local/Europe- Pre/Post Euro Volatility & Variance Ratios

BONDS

EURO COUNTRY	Pre-Euro Std. Deviation	# of days	Post-Euro Std. Deviation	# of days	Variance Ratio	P-Value	Stars
LOCAL							
Austria-Local	0.0044	393	0.0049	1043	1.26	0.00318	***
Austria	0.0050	393	0.0049	1043	1.74	0.00000	***
Belgium- Local	0.0032	783	0.0040	1043	1.54	0.00000	***
Belgium	0.0034	783	0.0040	1043	1.39	0.00000	***
Finland-Local	0.0019	783	0.0028	1043	2.27	0.00000	***
Finland	0.0017	783	0.0028	1043	2.57	0.00000	***
France-Local	0.0039	783	0.0045	1043	1.35	0.00000	***
France	0.0041	783	0.0045	1043	1.21	0.00252	***
Germany-Local	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Germany	0.0052	783	0.0052	1043	1.03	0.33805	*
Greece-Local	0.0100	154	0.0039	1043	0.15	1.00000	***
Greece	0.0112	154	0.0042	1043	0.14	1.00000	***
Ireland-Local	0.0034	783	0.0041	1043	1.48	0.00000	***
Ireland	0.0049	783	0.0041	1043	0.71	1.00000	***
Italy-Local	0.0061	783	0.0048	1043	0.62	1.00000	***
Italy	0.0073	783	0.0048	1043	0.43	1.00000	***
Luxembourg-Local	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Luxembourg	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Netherlands-Local	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Netherlands	0.0040	783	0.0047	1043	1.43	0.00000	***
Portugal-Local	0.0011	175	0.0037	1043	12.14	0.00000	***
Portugal	0.0014	175	0.0037	1043	6.77	0.00000	***

Spain-Local	0.0045	783	0.0041	1043	0.83	0.99790	***
Spain	0.0049	783	0.0041	1043	0.71	0.99999	***
MEDIAN	0.0042	783	0.0041	1043	1.31	0.00126	***

Non-Euro Country	Pre-Euro Std. Deviation	# of days	Post-Euro Std. Deviation	# of days	Variance Ratio	P-Value	Stars
Czech Republic-Local	N/A	N/A	0.0054	1043	N/A	N/A	*
Czech Republic- Europe	N/A	N/A	0.0068	1043	N/A	N/A	*
Denmark-Local	0.0041	783	0.0041	1043	1.02	0.40887	*
Denmark- Europe	0.0042	783	0.0041	1043	0.98	0.63923	*
Hungary-Local	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hungary	N/A	N/A	0.0062	1043	N/A	N/A	N/A
Norway-Local	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Norway	0.0029	783	0.0039	1043	1.86	0.00000	***
Poland-Local	N/A	N/A	0.1215	1043	N/A	N/A	N/A
Poland	N/A	N/A	0.0061	1043	N/A	N/A	N/A
Sweden-Local	0.0043	783	0.0042	1043	0.96	0.71072	*
Sweden	0.0070	783	0.0055	1043	0.63	1.00000	***
Switzerland-Local	0.0029	783	0.0029	1043	0.97	0.67342	*
Switzerland	0.0044	783	0.0038	1043	0.75	0.99999	***
UK-Local	0.0862	783	0.3010	1043	69.12	0.00000	***
UK	0.0065	783	0.0065	1043	0.92	0.90108	***
MEDIAN	0.0043	783	0.0055	1043	0.97	0.67342	***

Table 3B-Bond Data- US- Pre/Post Euro Volatility & Variance Ratios

BONDS

EURO COUNTRY	**Pre-Euro** Std. Deviation	# of days	**Post-Euro** Std. Deviation	# of days	**Variance Ratio**	**P-Value**	**Stars**
US							
Austria-US	0.0078	393	0.0088	1043	1.36	0.00016	***
Belgium-US	0.0058	783	0.0083	1043	2.06	0.00000	***
Finland-US	0.0036	783	0.0067	1043	3.36	0.00000	***
France-US	0.0060	783	0.0086	1043	2.03	0.00000	***
Germany-US	0.0068	783	0.0091	1043	1.78	0.00000	***
Greece-US	0.0012	154	0.0081	1043	0.46	1.00000	***
Ireland-US	0.0060	783	0.0083	1043	1.89	0.00000	***
Italy-US	0.0078	783	0.0088	1043	1.28	0.00012	***
Luxembourg-US	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Netherlands-US	0.0062	783	0.0087	1043	2.01	0.00000	***
Portugal-US	0.0022	175	0.0080	1043	13.02	0.00000	***
Spain-US	0.0064	783	0.0084	1043	1.72	0.00000	***
MEDIAN	0.0060	783	0.0084	1043	1.89	0.00000	***

Non-Euro Country	Pre-Euro Std. Deviation	# of days	Post-Euro Std. Deviation	# of days	Variance Ratio	P-Value	Stars
US							
Czech - US			0.0090	1043			
Denmark-US	0.0062	783	0.0083	1043	1.77	0.00000	***
Hungary-US	N/A	N/A	0.0071	1043	N/A	N/A	N/A
Norway-US	0.0032	783	0.0068	1043	4.58	0.00000	***
Poland-US	N/A	N/A	0.0071	1043	N/A	N/A	N/A
Sweden-US	0.0074	783	0.0079	1043	1.15	0.02013	***
Switzerland-US	0.0070	783	0.0077	1043	1.20	0.00333	***
UK-US	0.0065	783	0.0071	1043	1.19	0.00470	***
MEDIAN	0.0065	783	0.0074	1043	1.20	0.00333	***

Table 4- Short Term Interest Rates- Pre/Post Euro Volatility & Variance Ratios

Short-Term Interest Rates

EURO COUNTRY	Pre-Euro Std. Deviation	# of days	Post-Euro Std. Deviation	# of days	Variance Ratio	P-Value	Stars
Austria	0.0419	783	0.1414	1043	11.40	0.00000	***
Belgium	0.0648	783	0.1781	1043	7.55	0.00000	***
Finland	0.7700	783	0.1399	1043	0.03	1.00000	*
France	0.2090	783	0.1778	1043	0.72	0.99999	*
Germany	0.1515	783	0.1778	1043	1.38	0.00000	***
Greece	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ireland	0.0614	783	0.1254	1043	4.17	0.00000	***
Italy	0.0255	783	0.0605	1043	1.76	0.00000	***
Luxembourg	0.0099	783	0.0132	1043	1.20	0.00000	***
Netherlands	0.1217	783	0.1331	1043	1.20	0.00039	***
Portugal	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spain	0.0555	783	0.0537	1043	0.94	0.08420	*
MEDIAN	0.0631	783	0.1365	1043	1.29	0.00000	***

NON-EURO COUNTRY	Pre-Euro Std. Deviation	# of days	Post-Euro Std. Deviation	# of days	Variance Ratio	P-Value	Stars
Bulgaria	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Croatia	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyprus	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Czech Republic	6.4618	783	0.2498	1043	0.00	1.00000	***
Denmark	0.2343	783	0.0854	1043	0.13	1.00000	***
Hungary	0.8676	783	0.5558	1043	0.41	1.00000	***
Iceland	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Israel	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Latvia	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Norway	0.1904	783	0.1976	1043	1.20	0.00351	***
Poland	2.3385	783	2.2578	1043	0.93	0.85420	*
Romania	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Slovakia	4.9719	783	2.1340	1043	0.18	1.00000	***
Slovenia	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sweden	0.0400	783	0.0425	1043	1.13	0.03529	**
Switzerland	0.1836	783	0.1301	1043	0.50	1.00000	***
UK	1.1119	783	0.5727	1043	0.27	1.00000	***
MEDIAN	0.8676	783	0.2498	1043	0.41	1.00000	***

Table 5
Stock Return Volatility Regression Results

Intercept	-0.0937	0.4418	0.3458
T-Stat	-1.1792	2.8231	2.0255
Euro Dummy	0.1590	0.0433	-0.0090
T-Stat	1.3272	0.4309	-0.0809
Pre-Euro Volatility		-0.3339	-0.3123
T-Stat		-3.7422	-3.2322
GDP			0.0000
T-Stat			0.3129
Inflation			0.0802
T-Stat			0.0952
Exports/GDP			0.0046
T-Stat			2.0383
Imports/GDP			-0.0030
T-Stat			-1.1635
R-Squared	0.0711	0.4327	0.5417
Number of Observations	25	25	25
MS Residual	0.0884	0.0565	0.0558

Notes:
"Euro Dummy" equals 1 if Euro Country
"Euro Dummy" equals 0 if Non-Euro Country

Table 6
US Dollar-Denominated Bond Return Volatility Regression Results

Intercept	0.2245	0.1997	0.0021
T-Stat	2.8300	1.967	0.0091
Euro Dummy	0.0484	0.0615	0.0978
T-Stat	0.4888	0.5732	0.5723
Pre-Euro Volatility		0.0706	0.2918
T-Stat		0.4173	1.0356
GDP			-0.0001
T-Stat			-0.9045
Inflation			5.3739
T-Stat			0.7868
Exports/GDP			-0.0017
T-Stat			-0.5535
Imports/GDP			0.0041
T-Stat			1.0718
R-Squared	0.0195	0.0348	0.3082
Number of Observations	14	14	14
MS Residual	0.0315	0.0338	0.0381

Notes:
"Euro Dummy" equals 1 if Euro Country
"Euro Dummy" equals 0 if Non-Euro Country

Table 7
Local Currency Bond Return Volatility Regression Results

Intercept	0.1900	-0.1074	-0.2387
T-Stat	1.3939	-0.7989	-0.7965
Euro Dummy	-0.1256	0.0353	0.1732
T-Stat	-0.7372	0.2475	0.7863
Pre-Euro Volatility		0.8037	1.1883
T-Stat		3.7630	3.1283
GDP			-0.0002
T-Stat			-0.8397
Inflation			3.9254
T-Stat			0.4296
Exports/GDP			-0.0051
T-Stat			-1.2240
Imports/GDP			0.0051
T-Stat			1.0190
R-Squared	0.0231	0.4057	0.4546
Number of Observations	25	25	25
MS Residual	0.1673	0.1064	0.1193

Notes:
"Euro Dummy" equals 1 if Euro Country
"Euro Dummy" equals 0 if Non-Euro Country

Table 8
Interest Rate Volatility Regression Results

Intercept	-0.6222	-0.0400	-0.2230
T-Stat	-2.3300	-0.1488	-0.4578
Euro Dummy	0.7622	0.2285	0.4114
T-Stat	2.0710	0.6930	1.1100
Pre-Euro Volatility		-0.3193	-0.3088
T-Stat		-3.3840	-2.5280
GDP			-0.00005
T-Stat			-0.1553
Inflation			8.8764
T-Stat			0.9551
Exports/GDP			-0.0071
T-Stat			-1.2570
Imports/GDP			0.0013
T-Stat			0.2079
R-Squared	0.2015	0.5346	0.6312
Number of Observations	19	19	19
MS Residual	0.6415	0.3972	0.4198

Notes:
"Euro Dummy" equals 1 if Euro Country
"Euro Dummy" equals 0 if Non-Euro Country

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